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ABSTRACT

This report examines early school leaving in Australia. It draws in the most recent and extensive set of national data in early school leavers. It focuses on students who leave school before the beginning of Year 11 using a national representative longitudinal survey of Australian youth who were in Year 9 in 1995. The first part of the investigation examines the social and demographic characteristics of early school leavers. The second part reports on their reasons for early school leaving. The third part of the study models leaving school with social background, demographic, school and attitudinal factors. Particular attention is paid to the influence of individual schools on early school leaving. The final part of the study examines the post-school activities of early school leavers focusing in their labor force participation. (Contains 17 references and 9 tables.) (Author/GCP)

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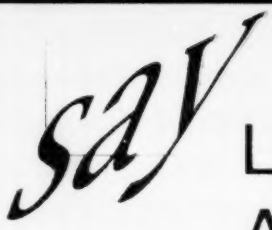

Longitudinal Surveys of Australian Youth

Research Report Number 11

Early School Leaving in Australia:

Findings from the 1995 Year 9 LSAY Cohort

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- Marks, G. & Ainley, J. *Reading Comprehension and Numeracy among Junior Secondary School Students in Australia* (LSAY Research Report No. 3). Melbourne: ACER, March 1997.
- Lamb, S. *School Achievement and Initial Education and Labour Market Outcomes* (LSAY Research Report No. 4). Melbourne: ACER, July 1997.
- Marks, G. *Attitudes to School Life: Their influences and their effects on achievement and leaving school* (LSAY Research Report No. 5). Melbourne: ACER, September 1998.
- Fleming, N. & Marks, G. *Well-being among Young Australians: Effects of work and home life for four Youth in Transition cohorts.* (LSAY Research Report No. 6). Melbourne: ACER, September 1998.
- Marks, G. & Fleming, N. *Factors Influencing Youth Unemployment in Australia: 1980-1994.* (LSAY Research Report No. 7). Melbourne: ACER, September 1998.
- Marks, G. & Fleming, N. *Youth Earnings in Australia: 1980-1994: A comparison of three youth cohorts.* (LSAY Research Report No. 8). Melbourne: ACER, September 1998.
- Robinson, L. *The Effects of Part-time Work on School Students.* (LSAY Research Report No. 9). Melbourne: ACER, March 1999.
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The *Longitudinal Surveys of Australian Youth* (LSAY) study the progress of several cohorts of young Australians between school, post-secondary education and training and work. The oldest cohort was born in 1961, while the youngest was a nationally representative sample of Year 9 students selected in 1998. The information from the surveys is used to provide a picture of what young Australians are doing and how this picture changes both as the cohort gets older and compared with other cohorts. More detailed investigations look at the links between social characteristics, education and training, and employment. Issues investigated in the LSAY project include school completion, participation in vocational and university education, part-time work, unemployment, earnings and school achievement. The project is commissioned by the Department of Education, Training and Youth Affairs (DETYA).

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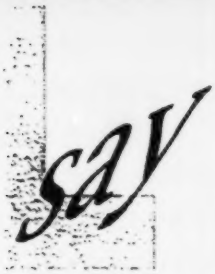

Longitudinal Surveys of Australian Youth

Research Report Number 11

EARLY SCHOOL LEAVING IN AUSTRALIA: FINDINGS FROM THE 1995 YEAR 9 LSAY COHORT

Gary N. Marks
Nicole Fleming

This report forms part of the Longitudinal Surveys of Australian Youth: a research program that is financially supported by the Commonwealth Department of Education, Training and Youth Affairs.

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August 1999

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Contents

Tables iv

Figures iv

EXECUTIVE SUMMARY v

INTRODUCTION 1

EARLY SCHOOL LEAVING: CAUSES AND CONSEQUENCES 2

Influences on Early School Leaving 2

Consequences of Early School Leaving 4

SCOPE AND ORGANISATION OF THE REPORT 5

FACTORS ASSOCIATED WITH EARLY SCHOOL LEAVING 7

REASONS FOR EARLY SCHOOL LEAVING 12

INFLUENCES ON EARLY SCHOOL LEAVING 13

Individual-Level Social Background, Demographic and School Factors 16

School-Level Factors 21

Attitudes to School and Aspirations about Leaving School 22

Effects of Individual Schools 23

POST-SCHOOL ACTIVITIES OF EARLY SCHOOL LEAVERS 23

CONCLUSION 26

REFERENCES 28

APPENDIX 1: DATA AND METHODS 29

APPENDIX 2: RESULTS OF LOGISTIC REGRESSIONS ON EARLY SCHOOL LEAVING 32

APPENDIX 3: ANALYSIS OF THE EFFECTS OF INDIVIDUAL SCHOOLS 34

NOTES 37

Tables

Table 1 Early School Leavers by Social and Demographic Group (Per cent) 8

Table 2 Early School Leavers by Achievement, Attitudes to School and Aspirations (Per cent) 10

Table 3 Reasons Given for Leaving School before Year 11 (Per cent) 12

Table 4 Main Activity of Early School Leavers during 1997 (Per cent) 24

Table 5 Occupations of Early School Leavers, 1997 (Per cent) 25

Table 6 Work Satisfaction among Students Working Part-time and Employed Early School Leavers, 1997 (Per cent) 25

Table A1 Influences on Early School Leaving (Models 1 and 2) 32

Table A2 Influences on Early School Leaving (Models 3 and 4) 33

Table A3 Number and Per cent of Schools with Non-Significant and Significant Net Effects on Early School Leaving 36

Figures

Figure 1 Frequency Distribution of the Within-School Incidence of Early School Leaving 11

Figure 2 The Models of Early School Leaving Showing the Groups of Factors Analysed 15

Figure 3 Effects of Parents' Socioeconomic Status (Model 4), School Achievement (Models 1 and 4), Parents' Education (Model 4), and Students' Attitudes to School (Model 4) on Early School Leaving 17

Figure 4 Net Effects of Background, School and Demographic Factors on Early School Leaving (Models 1 and 4). 20

Figure A1 Between-School Variation in Early School Leaving 35

EXECUTIVE SUMMARY

The report examines early school leaving in Australia. It draws on the most recent and extensive set of national data on early school leavers. It focuses on students who leave school before the beginning of Year 11 using a national representative longitudinal survey of Australian youth who were in Year 9 in 1995. The first part of the investigation examines the social and demographic characteristics of early school leavers. The second part reports on their reasons for early school leaving. The third part of the study models leaving school with social background, demographic, school and attitudinal factors. Particular attention is paid to the influence of individual schools on early school leaving. The final part of the study examines the post-school activities of early school leavers focusing on their labour force participation.

The main findings of this report are as follows:

- approximately 9 per cent of the 1995 Year 9 cohort had left school before the beginning of the 1997 school year;
- students with low levels of school achievement (measured by performance in literacy and numeracy) are substantially more likely to leave school early;
- boys are more likely to leave school early than girls and this tendency is not fully explained by differences in academic achievement, attitudes to school or aspirations;
- Aboriginal and Torres Strait Islander students are much more likely to leave school early, a tendency which among girls cannot be wholly attributed to their socioeconomic background or levels of school achievement;
- in general, students of non-English speaking backgrounds are less likely to leave school early;
- students living in regional and rural areas are more likely to leave school early;
- there are substantial State and Territory differences in early school leaving;
- only about 5 per cent of students attend schools which have a substantial influence on early school leaving net of student characteristics and school system;
- positive attitudes to school and higher aspirations about school completion decreased the likelihood of early school leaving;
- over 50 per cent of students who leave school early say that the main reason they left was to find a job or an apprenticeship. A further 13 per cent said they left because they did not like school; and
- over 70 per cent of early school leavers were working full-time, a further 8 per cent were working part-time and 11 per cent were looking for work.

Early School Leaving in Australia: Findings from the 1995 Year 9 LSAY Cohort

INTRODUCTION

The expansion of education and the importance of qualifications for an increasing range of jobs pose questions about those who do not complete secondary school. Most often this group is viewed in negative terms; they do not have the ability to stay at school, they are dissatisfied with schools and teachers or, due to social disadvantage, they were unable to remain at school. Furthermore, it is presumed that they will be severely disadvantaged in the labour market, continually moving between unemployment and an ever-decreasing range of unskilled low paying jobs. Alternatively, early school leaving may be seen in a more positive light. Some students choose to leave school early because the academic environment of schools does not suit them, they are more practically orientated or they feel they are mature enough to enter the labour market. They leave school because they find the adult world of work more satisfying and are interested in particular careers that do not require further study at school. Furthermore, their early entry into the labour market may facilitate their later labour market outcomes.

This report focuses on early school leavers defined as students who left school by the beginning of Year 11 and did not return to school. It presents the demographic, social background, educational and attitudinal correlates of early school leaving, the reasons for early school leaving, the influences on early school leaving, and the activities of early school leavers after they had left school.

Until about 15 years ago, Year 12 was principally a qualifying year for the minority of young people intending to go to university. However, the decline in employment opportunities for teenagers, explicit government policies designed to increase retention rates, and possibly a change in parents' expectations for their children's education, have engendered a substantial rise in school retention. Retention rates rose from around 35 per cent in 1980 to over 70 per cent during the early 1990s (Lamb, 1996). Although there has been a subsequent small decline in retention rates, a recent government initiative, the Commonwealth Youth Allowance, is likely to increase retention rates once more. This allowance is not available to early school leavers who are not working or undertaking further education or training. The overall rise in school retention rates since the early 1980s has consequences for the mix of students who leave school early. One possibility is that this group will face greater disadvantages since they cannot cope even with an expanded school curriculum designed to cater for them. Alternatively, this group may have better labour market outcomes since they have made a considered choice to leave school against the norm of Year 12 completion and face less competition for the available jobs.

Both the community and governments are concerned with early school leaving. Governments are concerned about possible undesirable social outcomes and the economic cost of early school leaving. Rumberger (1995) suggests that the cost of each year's cohort of early school leavers amounts to billions of (US) taxpayers dollars due to the loss of tax revenue and a greater reliance on welfare. Research into early school leavers is important because they are clearly an 'at risk' group. In order to direct policy

towards early school leavers it is necessary to know what type of student leaves school early, what are the influences on early school leaving, and what are the consequences of early school leaving. It is the purpose of this report to provide information on these aspects of early school leaving.

Longitudinal data is especially useful for the study of early school leavers. The longitudinal data of the LSAY project provide accurate national estimates for both entire cohorts and their constituent social groups. The data encompasses possible influences on early school leaving (most importantly social background and school achievement) and the post-school activities of early school leavers can be readily ascertained.

EARLY SCHOOL LEAVING: CAUSES AND CONSEQUENCES

This brief literature review is divided into two sections: the influences on early school leaving; and the consequences of early school leaving. The review is used to identify key variables to guide the analyses in this report. The literature review is largely confined to Australian studies. It is important to note that in many of these studies the focus is on non-completers of Year 12 who may differ substantially from those who leave school before the beginning of Year 11.

Influences on Early School Leaving

Academic performance is often cited as a major reason for early school leaving. Batten and Russell (1995) suggested that many early school leavers have literacy and numeracy levels well below those of their age group. During the 1980s school completion was strongly associated with achievement level (Williams, Long, Carpenter, & Hayden, 1993). In a comparison of non-completers in Australia and the United States, Lamb and Rumberger (1998) report a strong negative relationship between school achievement and dropping out of school in both countries. Similarly, Robinson (1999) using other longitudinal data, reports very strong effects of school achievement in a multivariate analysis of school completion. Students in the top achievement quartile were 7 to 8 times more likely to complete school than students in the lowest quartile, other factors equal. Using the same data as in the present study Marks (1998) found school achievement to be the strongest influence on very early school leaving, that is leaving before completing Year 10.

Another correlate of early school leaving is socioeconomic background. A 'social gradient' is evident, with socioeconomic background inversely related to early school leaving (Batten & Russell, 1995). Research by the Department of Employment, Education and Training concluded that early school leavers were more likely to come from lower socioeconomic and less educated families (DEET, 1993a). An ACER report on school completion during the 1980s found marked differences in school completion by parental occupation and education level (Williams et al., 1993). A social gradient in the relation between father's occupation and non-completion is also reported by Lamb and Rumberger (1998). Interestingly, the gradient appears steeper in the United States than in Australia. In multivariate analyses (when controlling for other influences) the effect of socioeconomic background is considerably weaker than in the bivariate case. Lamb

(1996) found minimal effects of social background variables in the peak year of school retention in Australia (1992). In Robinson's (1999) analysis which controlled for school achievement, the effect of father's occupation on Year 12 completion was not significant although parental education was significant. Students whose parents had completed a post-secondary school qualification were twice as likely to complete school than students whose parents had left school before the early secondary school years. Similarly, Marks (1998) found no significant effect of father's occupational status on very early school leaving but found a significant effect for parents' education.

In Australia, boys are more likely to leave school earlier than girls. In 1994, 27 per cent of 19 year-old males had not completed secondary school compared to 18 per cent of girls (Lamb & Rumberger, 1998). Robinson (1999) found that male students were only about 0.6 times as likely to complete secondary school as female students. For very early school leaving, boys showed a stronger propensity to leave school early (Marks, 1998).[1] There are some indications that gender differences in school completion (favouring girls) are increasing. According to Williams et al. (1993:14) the gap between males and females increased from 3 percentage points for students born in 1961 to 7 percentage points for students born in 1970. Lamb (1996) found no significant gender differences in the cohort completing school in 1989, significant differences for the cohort completing school in 1991, and stronger gender differences in the cohort completing school in 1994.

Students from rural areas are more likely not to complete Year 12 than students living in urban areas. Williams et al. (1993:48-49) found that urban-rural differences in school completion were smaller for the cohort born in 1970 than for the two older cohorts (born in 1961 and 1965). Lamb and Rumberger (1998) report that 17 per cent of urban students had left school early compared to 29 per cent of students living in rural areas. Robinson's (1999) analysis shows that rural students were significantly less likely to complete school.

Students from a non-English speaking background have generally become less likely to leave school early than students from English-speaking backgrounds. In 1980, there was little difference between the rates of school completion by age 19 between Australian-born students and first generation non-English speaking background students. In 1984 and 1989 the latter students exhibited school completion rates over 20 per cent higher than those for the Australian-born (Williams et al., 1993:46-48). For cohorts completing school in the early 1990s, Lamb and Rumberger (1998) report that only 10 per cent of non-English speaking background students had not completed Year 12 compared to 22 per cent of Australian-born students. Robinson (1999), analysing school completion for a cohort born in 1975, found that students from non-English backgrounds were about 1.5 times more likely to complete school net of the effects of achievement and other factors.

The States and Territories show considerable differences in both school retention and participation rates. The apparent retention rate to Year 12 (in 1996) ranged from around 40 per cent in the Northern Territory to over 90 per cent in the Australian Capital Territory (ABS, 1997:3). The Bureau's publication also shows high participation rates for 15 and 16 year olds in the ACT and Victoria and considerably lower participation rates in Tasmania and the Northern Territory (ABS, 1997:70). The Bureau notes that both retention and participation rates are sensitive to differences in enrolment policies, inter-sector transfer and interstate movements of students (ABS, 1997:68). Therefore, such

data are not completely accurate measures of differences between States in the proportion of early school leavers.

School sector is also related to early school leaving. A report on early school leavers from the *Australian Youth Survey* concluded that they were more likely to have attended a government school (DEET, 1993a). The ABS figures in *Schools Australia* show that apparent Year 12 retention rates are lowest in government schools and highest in non-Catholic independent schools. Lamb and Rumberger (1998) found that non-completion of Year 12 is higher among students from government schools followed by students from Catholic schools; students in independent schools exhibit the lowest rate of non-completion.

Although there is considerable evidence on State and sector differences in early school leaving, it is likely that there are also differences between individual schools in the propensity for students to leave school within school systems. Anecdotal evidence suggests that there are schools serving the same geographic area with similar student compositions but which differ greatly in the proportion of early school leavers. In a study of student progress in government schools in New South Wales, Ainley & Sheret (1992:113-114) report large between-school differences in retention to Year 12. They noted that schools with higher than expected retention rates had higher levels of school achievement and schools with lower than expected retention rates had lower levels of school achievement.

The focus of the preceding discussion has been on the sociological influences on leaving or remaining at school. Psychological factors also play a role. Those students who are motivated, who show more positive attitudes toward school and school work, and who have higher aspirations for their educational career are less likely to leave school early. In the study on student progress mentioned above, students in schools with lower than expected retention rates tended to have unfavourable attitudes to school and lower aspirations (Ainley & Sheret, 1992:119-124).

Economic factors may also influence early school leaving. Young people would be less inclined to leave school early when employment opportunities are limited. On the other hand an improved youth labour market may encourage early school leaving. In Australia it is difficult to draw conclusions about the direct effects of the economy on early school leaving. School retention rates steadily increased during the 1980s during each phase of the economic cycle.

Consequences of Early School Leaving

There is evidence that early school leaving is associated with a range of unfavourable outcomes. A recent study of early school leavers in Australia found that they were moving in and out of employment and increasingly relying on their families and the welfare system (Dwyer, 1995). More recent Australian research, using longitudinal data, has also confirmed that not completing Year 12 increases the chances of becoming unemployed, at least during the early career, and has a negative impact on earnings (Marks & Fleming, 1998a; Marks & Fleming, 1998b). A study of 132 early school leavers from 1990 to 1993 found that less than 40 per cent were employed and many were

in very low paying jobs (Holden, 1992). Seventy per cent of the group were without any reliable source of income. Research into the consequences of early school leaving in the USA found that early school leavers faced greater likelihood of unemployment, and had less job satisfaction and lower salaries than those who graduated from high school (McCaul et al., 1992). A study by DEET (1993b), based on earlier longitudinal surveys, concluded that early school leavers had a much higher unemployment rate (23 per cent) than the comparison group (13 per cent). Furthermore, early school leavers were more likely to move from employment to unemployment, and tended to be employed for less time in a given year.

More positive labour market outcomes for early school leavers have been found by more recent work. Lamb and Rumberger (1998) found that at age 19, 64 per cent of early school leavers were working full-time, 10 per cent were working part-time and 11 per cent were unemployed. A higher proportion of male than female early school leavers were working full-time (72 per cent compared to 56 per cent) although the percentage unemployed was the same. A much higher proportion of female early school leavers (12 per cent compared to 1 per cent for males) was defined as not in the labour force.

SCOPE AND ORGANISATION OF THE REPORT

This report will add to our understanding of early school leavers by analysing recent data from a large national study. Specifically this report addresses the following issues.

1. Achievement in literacy and numeracy is an important influence on early school leaving. Social background and other factors may be associated with early school leaving but indirectly through their effect on school achievement. Thus the role of academic performance *vis-à-vis* other factors is a very important consideration in the study of early school leaving. If, for example, the effects of social background variables are negligible after controlling for academic achievement then it can be argued that social differences in early school leaving reflect school achievement rather than systematic social disadvantage. If on the other hand, the effects of social background are strong after controlling for academic achievement then there is evidence of systematic social disadvantage.

2. The role of gender in educational outcomes is prominent in the literature. Recently, there is evidence that boys relative to girls experience less favourable educational outcomes. This report examines whether, and to what extent, boys are more likely to leave school early than girls, and if gender differences in early school leaving can be attributed to differences in school achievement, attitudes to school and aspirations.

3. Socioeconomic background features prominently in research on educational outcomes. This study examines the effects of socioeconomic background and school achievement to identify which is the stronger influence. Furthermore, we test the hypothesis that students from more educated households are less likely to leave school early regardless of school achievement; and, we compare the effects of parental educational and occupational status to determine which has a stronger effect on early school leaving.

4. Recent research has indicated that students from non-English-speaking backgrounds have more favourable educational outcomes than students from English-speaking backgrounds. In this report we investigate the extent to which students from non-English speaking backgrounds are less likely to leave school early, and if this difference can be attributed to differences in attitudes and aspirations.

5. Aboriginal and Torres Strait Islander students have generally poor educational outcomes. In this study we investigate the extent to which they are more likely to leave school early and whether their propensity to leave school early can be explained by their lower achievement levels, their socioeconomic background and/or differences in attitudes and aspirations. If these factors do not fully explain early school leaving among Indigenous students, then there is evidence of systematic social disadvantage.

6. Students living in regional and rural areas may not have access to the same educational resources as students living in major metropolitan areas. The report investigates whether non-urban students are more likely to leave school early, and if the influence of region on early school leaving can be attributed to other factors such as school achievement, school system and social background.

7. In this investigation we test the hypothesis that the schools' sociocultural environment (in this study, the socioeconomic, achievement and attitudinal environment) will influence school leaving in addition to the effects of individual student-level and educational system-level factors.

8. Individual schools are likely to be an additional influence on early school leaving. Students in some schools may be more likely to leave school than similar students in other schools. We present school differences in early school leaving. Subsequently, we estimate the proportion of students at schools in which the extent of early school leaving is significantly different from the proportion expected to leave given the academic and social mix of the schools.

9. Although this report mainly focuses on the attributes of students that are associated with early school leaving, the students' subjective evaluations of why they left school are also important. If, for example, students said they left school because they did not like school, their teachers or the subjects they studied, then the implication is that schools could do more to keep students at school.

10. In this study we examine the effects on early school leaving of the students' attitudes to school life, and their aspirations regarding leaving school when they were in Year 9.

11. Evidence from earlier LSAY reports and other publications indicates that early school leavers experience relatively poor labour market outcomes. In this study we report on the post-school activities of early school leavers, the occupations of those in the workforce, and their satisfaction with work compared to students working part-time.

The discussion of the data analyses performed for this report is organised into four sections:

The first section examines the relationship between early school leaving and a variety of social backgrounds, demographic and school-related factors, by presenting the results from cross-tabulations;

The second section reports on the findings obtained from questions asked of early school leavers on why they left school early;

The third section examines the influences on early school leaving with multivariate analyses. The results of these analyses show which factors are important to early school leaving and which have only marginal or no effects. These analyses include an examination of the influence of individual schools on early school leaving, and how much of these between school differences can be attributed to State and Territory, school sector and individual student-level factors; and

The final section focuses on the post-school activities of early school leavers, focusing on their post-school and labour market experiences.

FACTORS ASSOCIATED WITH EARLY SCHOOL LEAVING

Table 1 presents the incidence of early school leaving by social characteristics and school factors. The first row shows the percentage of the sample who left school before the beginning of Year 11. Approximately 9 per cent had left school by the beginning of the 1997 school year. A higher proportion of boys left school (10 per cent) than girls (7 per cent).

Students from professional and managerial backgrounds show lower rates of early school leaving than students from other occupational backgrounds. About 6 per cent of students from professional or managerial backgrounds had left school compared to 11 per cent of those from trade and skilled manual backgrounds, and about 12 per cent of those from unskilled or semi-skilled manual backgrounds. The relative differences between occupational backgrounds are similar for boys and girls although the percentage of boys from unskilled manual backgrounds leaving school early is substantial (almost 17 per cent).

Educational background appears to have a similar relationship with early school leaving as parental occupation. Students whose parents had an average education level more than one standard deviation above the mean level for parents' education show a very low rate of early school leaving (at around 3 per cent). This contrasts with 11 per cent of students with parents in the least educated group. As was the case for occupational background there are greater differences in early school leaving by educational background for boys than for girls.

High proportions of Aboriginal and Torres Strait Islander students had left school before Year 11 (21 per cent). Of this group, a slightly higher proportion of boys left than girls.

Table 1 Early School Leavers by Social and Demographic Group (Per cent)

	All (N=11624)	Male (N=5613)	Female (N=6011)
Total Cohort Population	9	10	7
Parents' Occupation			
Professional/Managerial	6	7	5
Clerical /Personal Service	6	7	5
Skilled Manual	11	13	9
Unskilled Manual	12	17	9
Parental Education Level			
More than 1 SD above mean	3	4	2
Mean to 1 SD above mean	8	9	7
1 SD Below mean to mean	10	12	7
More than 1 SD below mean	11	13	9
Aboriginal or Torres Strait Islander			
ATSI background	21	22	20
Non-ATSI background	8	10	7
Language Background			
Non-English speaking background	6	7	4
English speaking background	9	10	8
Region			
Metropolitan (>100,000)	6	7	6
Regional (1,000-99,000)	10	12	8
Rural/Remote (<1,000)	14	17	10
State or Territory			
Australian Capital Territory	5	6	3
New South Wales	12	14	10
Victoria	6	8	5
Queensland	10	11	7
South Australia	5	5	4
Western Australia	9	9	8
Tasmania	18	15	21
Northern Territory	10	13	7
School Sector			
Independent	4	5	4
Catholic	7	8	5
Government	11	12	9

Note: *School leaving is defined as the proportion of respondents who have left school before the beginning of Year 11 and have not returned to school. The measures are described in Appendix 1.*

SD = Standard Deviation.[2]

Students from non-English speaking backgrounds display substantially lower rates of early school leaving. Only 6 per cent of this group left school before Year 11 compared to around 9 per cent for students from English-speaking backgrounds.

There are substantial regional differences in early school leaving. Students who in Year 9 were living in metropolitan areas were less likely to leave school early than students attending schools in regional or rural areas. Only 6 per cent of students living in metropolitan areas had left school before the beginning of Year 11 compared to 10 per cent of students living in regional areas and a substantial 14 per cent of students living in rural or remote areas.

The well-documented differences in school retention between the Australian States and Territories are reflected in these data. The Australian Capital Territory and South Australia show the lowest percentage of early school leavers (5 per cent) and Tasmania shows the highest (18 per cent). Victorian students show a lower incidence of early school leaving (6 per cent) than students from Western Australia (9 per cent) or Queensland and the Northern Territory (10 per cent). New South Wales shows a relatively high incidence of early school leaving at 12 per cent. In most States the percentage of boys leaving school early is higher than that for girls. The exception is Tasmania in which 21 per cent of girls leave school early compared to 15 per cent of boys.

School sector differences in early school leaving are also apparent from these data. Students attending government schools exhibit the highest percentage of early school leavers (11 per cent) followed by Catholic schools (7 per cent) and non-Catholic non-government schools (4 per cent).

Table 2 presents the incidence of early school leavers by achievement, attitudes to school and aspirations. It is clear from this Table that these factors have strong relationships with early school leaving.

School achievement measured by tests in literacy and numeracy when the students were in Year 9 shows a strong relationship with early school leaving. Of students whose performance on these tests was more than one standard deviation below the mean, 20 per cent had left before the beginning of Year 11. This contrasts with only 2 per cent of students who scored more than one standard deviation above the mean. Of all early school leavers, nearly half (46 per cent) were in the lowest achievement category, and three-quarters (76 per cent) had an achievement score below the mean. In contrast only 3 per cent of early school leavers had an achievement score more than one standard deviation above the mean.

Among boys the relationship between achievement and early school leaving is even more pronounced. Of students who scored more than one standard deviation below the mean, 21 per cent had left school before the beginning of Year 11. This compares with 17 per cent of girls performing at the same level.

Table 2 Early School Leavers by Achievement, Attitudes to School and Aspirations (Per cent)

	All (N=11624)	Male (N=5613)	Female (N=6011)
Achievement Level			
More than 1 SD above mean	2	3	1
Mean to 1 SD above mean	5	6	5
1 SD Below mean to mean	10	12	8
More than 1 SD below mean	20	21	17
Attitudes to School I (General Satisfaction)			
More than 1 SD above mean	5	4	4
Mean to 1 SD above mean	7	7	5
1 SD Below mean to mean	9	10	7
More than 1 SD below mean	19	20	15
Attitudes to School II (Teachers)			
More than 1 SD above mean	5	7	4
Mean to 1 SD above mean	7	8	6
1 SD Below mean to mean	10	11	8
More than 1 SD below mean	15	16	13
Attitudes to School III (Opportunity)			
More than 1 SD above mean	5	5	4
Mean to 1 SD above mean	7	8	5
1 SD Below mean to mean	9	10	8
More than 1 SD below mean	17	20	14
Attitudes to School IV (Own Achievement)			
More than 1 SD above mean	4	5	3
Mean to 1 SD above mean	6	6	4
1 SD Below mean to mean	9	11	7
More than 1 SD below mean	19	21	17
Aspirations			
Intend to Leave School By Year 11	48	48	49
Did Not Intend to Leave School By Year 11	6	7	5

Note: *School leaving is defined as the proportion of respondents who have left school before the beginning of Year 11 and have not returned to school. The measures are described in Appendix 1.*

SD = Standard Deviation.[2]

The four measures of attitudes to school life (General Satisfaction, Teachers, Opportunity and Achievement) are also associated with early school leaving. On all four measures students with the most positive attitudes to school were substantially less likely to leave school than students with less positive attitudes. No single attitude to school dimension stands out as being stronger than the other three, although attitudes to teachers have a slightly weaker relationship with early school leaving. All four have a weaker association with early school leaving than achievement.[3] Interestingly, attitudes to school have a stronger association with early school leaving among boys than girls (Table 2).

Students who in Year 9 thought they would leave school before Year 11 had a strong tendency to do just that (Table 2). Of those students who in 1995 indicated they intended to leave school before Year 11, approximately 7 per cent of the initial sample, almost half had done so. Of early school leavers 63 per cent had indicated in 1995 that they would not be at school in 1997. Aspirations are by far the strongest correlate of early school leaving.[4] There is little or no gender difference in the relationship between aspirations and early school leaving.[5]

Early school leaving varies substantially between schools. Figure 1 shows the frequency distribution of the within-school incidence of early school leaving.[6] In 48 of the 300 schools (16 per cent) in the sample, no student had left school before the beginning of Year 11. In 58 per cent of schools, the incidence of early school leaving was less than the mean incidence of 9 per cent. Approximately 12 per cent of schools showed an incidence of early school leaving greater than 20 per cent.[7]

The results discussed in this section show the relationships between social and other factors and early school leaving. Given the sampling design and the weights applied for sample and population differences and attrition since 1995, they are our best estimates of the (overall and group) percentages of early school leavers for the entire Australian 1995 Year 9 cohort.

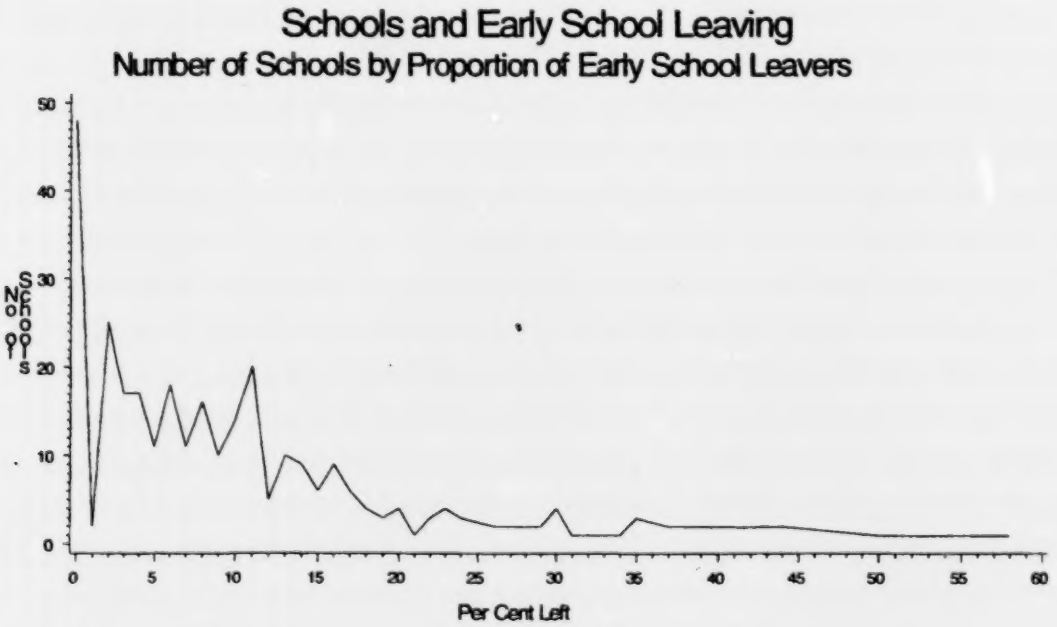

Figure 1 Frequency Distribution of the Within-School Incidence of Early School Leaving

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Table 3 Reasons Given for Leaving School before Year 11 (Per cent)

Reasons for leaving school	Important			Main Reason		
	All N=795	Male N=467	Female N=328	All N=795	Male N=467	Female N=328
I wanted to get a job/ apprenticeship	84	88	77	54	64	40
I was not doing very well at school	40	41	39	5	4	7
I wanted to do job training that wasn't available at school	48	49	47	5	3	8
I didn't like school	51	53	49	13	11	15
Financially, it was hard to stay at school	18	16	21	1	0	3
Teachers thought I should	19	24	11	2	3	2
To earn my own money	80	85	71	6	7	5
The school didn't offer the subjects/courses I wanted to do	41	38	46	5	3	8
Other reasons	-	-	-	10	7	14
				100	100	100

Note: *Figures are rounded and this may affect the total.*

REASONS FOR EARLY SCHOOL LEAVING

In this section we discuss the students' stated reasons as to why they left school. Their opinions are informative since they tell us if they left school for negative reasons (such as financial hardship) or for more positive reasons.

In the 1997 telephone interview, the respondents were read a list of possible reasons for leaving school and asked whether that reason was an important or unimportant consideration in why they left school. They were then subsequently asked which of those reasons was the main reason why they left school. They were allowed the option of nominating a reason other than those read out.

Table 3 presents the results obtained from questions asked of early school leavers on why they left school. Of the reasons offered for leaving school 'getting a job /apprenticeship' was judged as 'important' by over 80 per cent of early school leavers. The next most popular reason was 'to earn my own money' followed by 'I didn't like school'. Nearly half indicated that job training not available at school was important in their decision to leave school. About 40 per cent indicated that their academic performance was an important reason why they left school. A similar percentage indicated that the limited choice of subjects at school was an important consideration. The least nominated reasons were advice from teachers and that it was financially hard to stay at school.

When asked what was the *most* important reason why they left school over half of the early school leavers indicated that they wanted to gain employment or an apprenticeship. The next reason most frequently chosen as the main reason for leaving school was 'I didn't like school'. However, only 13 per cent of early school leavers chose this as the main reason. A further 6 per cent chose 'to earn my own money'. Only small percentages of early school leavers chose other reasons as the main reason for leaving school,

especially 'Teachers thought I should leave' (2 per cent) and 'Financially, it was hard to stay at school' (1 per cent).

There were few notable gender differences in the reasons for early school leaving. Boys were more likely than girls to choose 'getting a job or apprenticeship' and 'earning my own money'. Boys were more likely to indicate that the teachers thought they should leave. More girls than boys indicated that the limited choice of subjects was a consideration in leaving school. Not liking school was viewed as a consideration by a slightly higher percentage of boys than girls whereas substantially more girls than boys chose this as the main reason they left school.

When asked if they were happy that they left school before Year 11, the overwhelming majority (88 per cent) said they were very happy (40 per cent) or happy (48 per cent) with this decision (results not shown).

INFLUENCES ON EARLY SCHOOL LEAVING

The results in Tables 1 and 2 show that many factors are associated with early school leaving. However, these results do not show the extent to which group differences can be attributed to the effects of other factors. For example, the high percentage of early school leavers in Tasmania may be due to the higher percentage of students living in non-metropolitan areas in Tasmania, or the relatively lower socioeconomic background of Tasmanian students compared to students living in other States. Similarly, the strong relationship between satisfaction with school or attitudes to the students' own achievement and early school leaving may be attributed (partly or largely) to achievement in literacy and numeracy, since lower achieving students may be less satisfied with school and less happy with their own achievement. Therefore, multivariate statistical procedures are necessary to incorporate the range of possible influences, to control for the inter-relationships between influences, and therefore allow conclusions on which are the most important influences. It is not possible to examine the effects of the economy on early school leaving since we are focusing on only one cohort of school students.

Given the necessity to analyse early school leaving with multivariate statistical procedures the next problem is the selection of factors to analyse. One alternative is to analyse only particular groups of factors but this procedure is problematic. If, for example, the influences analysed are confined to demographic and background factors, then the influences of the students' attitudes and aspirations are left unanalysed, although Table 2 results indicate that these factors are likely to influence early school leaving. An alternative solution is to analyse all factors together. However, such a procedure means that the effects of factors most distant in time from early school leaving (such as demographic and social background factors) are likely to be substantially reduced since their effects are transmitted through other factors (such as attitudes and aspirations).

Our solution to this problem is to analyse a series of models of early school leaving. We sequentially add four groups of factors, adding those factors most distal to early school leaving first, and more proximate influences later. The more proximate influences are likely to transmit the effects of more distal factors. For example the effect of occupational

or educational background may be transmitted via more positive attitudes to school or higher aspirations.

The four groups of factors are: individual-level, social background and demographic factors; school-level factors; students' attitudes to school; and the students' aspirations. Therefore four models were analysed.

The first model (Model 1) comprises only individual-level social background and demographic factors (including school achievement), as well as State and school sector. Model 2 comprises these factors with the addition of measures of the schools' sociocultural environment. Model 3 adds students' attitudes to school, and Model 4 the students' educational aspirations. The four models are presented diagrammatically in Figure 2. Appendix 1 provides details on the measures and the analytical techniques used.

These models estimate the total and direct effects of the various factors on early school leaving. The total effect is a factor's influence when it is first introduced into the modelling procedure. The direct effects are the effects when controlling for subsequent factors which may account for (or explain) to some extent, the total effects. For example, the total effect of parents' education may be mediated (or explained) in part by more positive attitudes to school and higher educational aspirations. The change in magnitude between the total and direct effects indicates the extent to which the influence of parental education is explained through attitudes and aspirations. This is an important aspect of this report since it attempts to uncover what it is about a particular factor that contributes to its effect on early school leaving.

The charts and graphs in Figures 3 and 4 present the results of factors influencing the relative odds of leaving school before the beginning of Year 11. The odds ratios are readily interpretable. For example, an odds ratio of 2.0 for a particular factor indicates that respondents with that characteristic are twice as likely to leave school (rather than not leave school) compared to respondents without that characteristic.[8] Odds ratios above one indicate an increased likelihood of leaving school and ratios below one indicate a decreased likelihood. Odds ratios are always positive. The greater an odds ratio is from one the stronger the effect. An odds ratio equal to one means no effect or that the effect failed to reach statistical significance.

Figure 4 is a bar chart showing the odds ratios for categorical variables such as gender, ethnicity, State, and school sector. In these bar charts the effects on the odds of early school leaving are directly comparable. However these odds ratios are not directly comparable with the effects for continuous variables (occupational background, parents' education, school achievement, and attitudes to school). Therefore, we include plots of the effects of the continuous variables in Figure 3 for the appropriate range of values for each influence. Differences in the slopes of these plots indicate the relative strength of the continuous variables on early school leaving.

The odds ratios presented in the figures are derived from the estimates obtained from Models 1 and 4 (presented in Table A1 and Table A2). The effects for Model 1 are total effects. The effects for Model 4 are net effects or direct effects, that is the influence of a particular factor on early school leaving, after allowing for the influence of the other factors in Model 4.

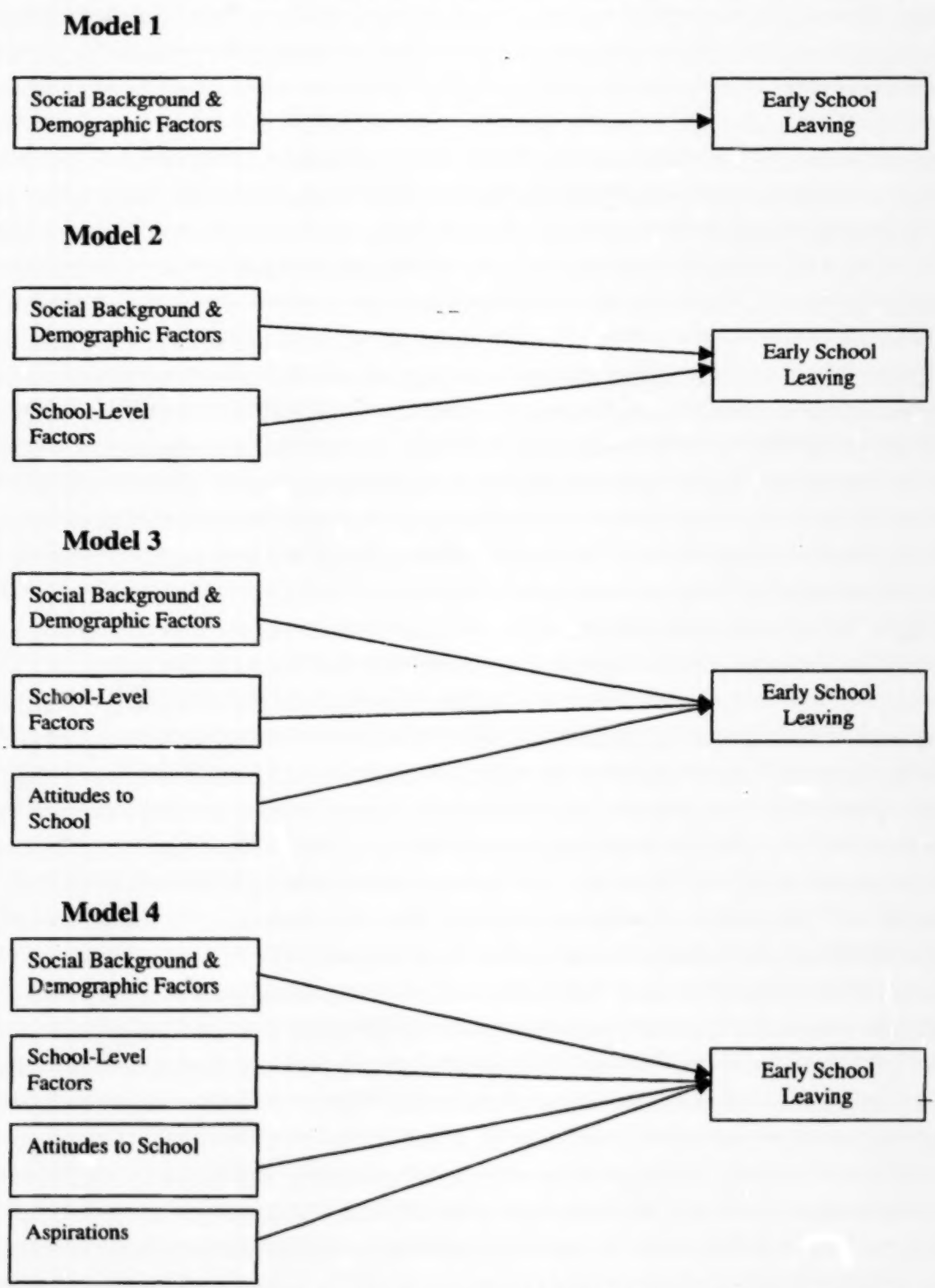

Figure 2 The Models of Early School Leaving Showing the Groups of Factors Analysed

The odds ratios in the Figures are based on the results for all respondents; the results from the separate analyses of males and females are presented in Appendix 2. Gender differences in the effects of particular factors are discussed in the text where they are important.

Appendix 2 also shows the results from all four models. These are presented as logistic coefficients; the odds ratios are simply the exponents of these coefficients.

Individual-Level Social Background, Demographic and School Factors

Gender

The bivariate analysis in the first section showed that boys are more likely to leave school early than girls. The results in Table 1 indicate that with no controls, boys are about 1.5 times more likely to leave school early than girls.[9] When controlling for school achievement, individual schools, and the other factors in Model 1, the effect is even higher with an odds ratio of about 1.9 (Figure 4). This finding indicates that boys, with the same levels of achievement, and equal on other factors in Model 1 with girls, are substantially more likely to leave school early. The gender differences decline with the addition of attitudes to school (Model 3) and further declines with the addition of aspirations (Model 4) to an odds ratio of 1.5 (Figure 4). Therefore, differences between males and females in attitudes to school and aspirations account for some of the gender difference in early school leaving.

It is important to note that the gender difference on early school leaving is large in comparison with other effects.[10] It is larger than the difference in parental occupation between the highest and lowest status occupations. It is equivalent to a difference of about six years in formal education of the respondents' parents. It is slightly less than the effect of a one standard deviation difference in achievement.

Parental Occupational Status

The effects of parental occupational status and education on early school leaving (for Model 1) are presented in Figure 3. The effects of parental occupational are weak. A 10 unit increase in occupational background scores reduces the odds of early school leaving by about 1.05. The effects of parental occupational status are not statistically significant for girls (Models 1 to 3, Table A1 and Table A2) and just reached statistical significance in Model 4. The weak effects of occupational status on early school leaving in these models compared to the relatively strong effects shown in Table 1 are because parental education is a stronger influence than occupational status and they are inter-correlated.

The direct effects of parental occupational status (after the addition of school-level factors, attitudes to school and aspirations in Model 4) are similar to the total effects in Model 1 (Table A1 and Table A2). Therefore there are only very weak or non-existent indirect effects of parental occupational status on early school leaving via the additional factors in Models 2 to 4. In other words, the small influence of parental occupation on early school leaving is not explained by aggregate school-level factors, attitudes to school or aspirations.

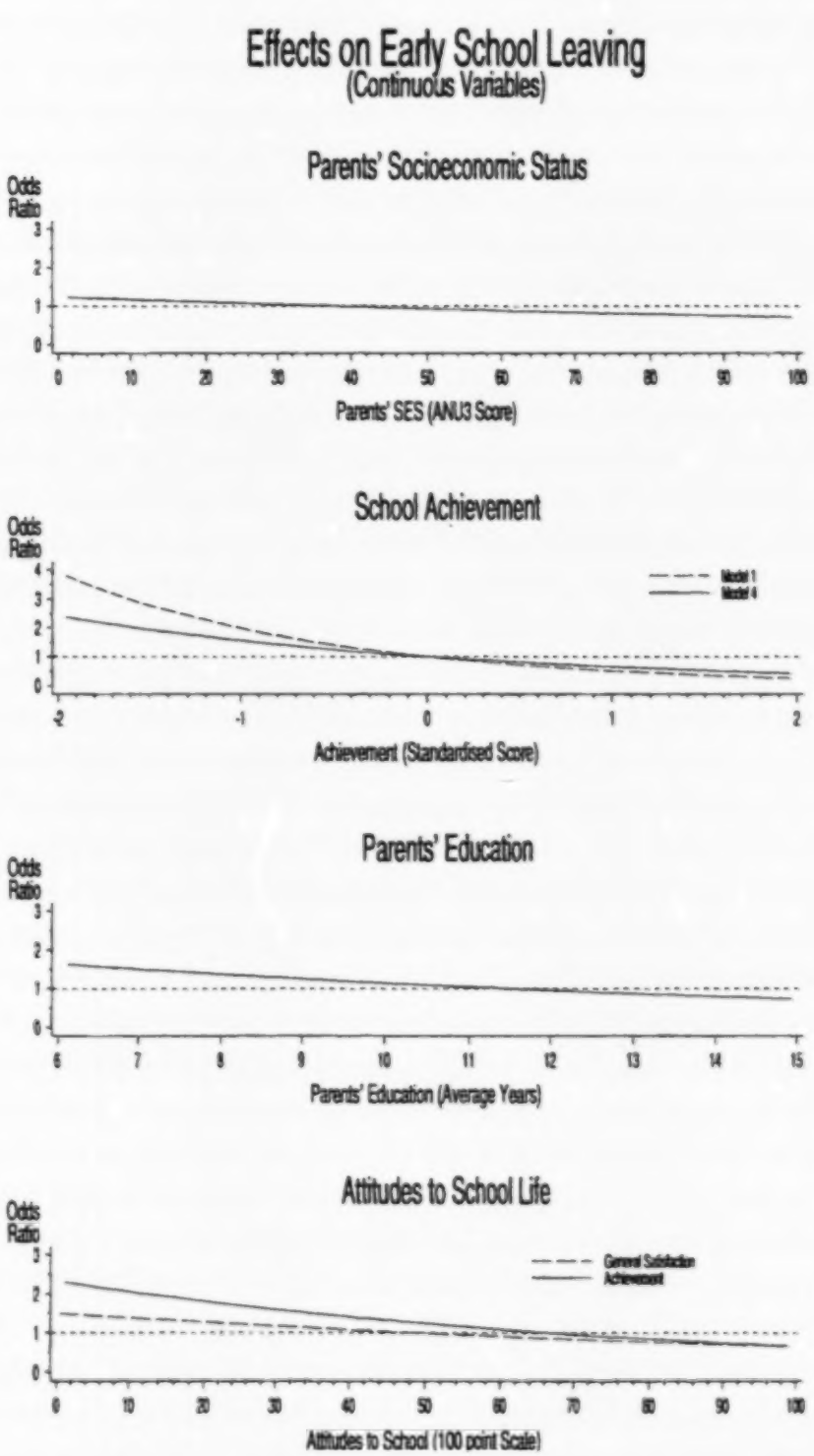

Figure 3 Effects of Parents' Socioeconomic Status (Model 4), School Achievement (Models 1 and 4), Parents' Education (Model 4), and Students' Attitudes to School (Model 4) on Early School Leaving

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Some readers may question the weak effects of parental occupational status on early school leaving arguing that it has strong indirect effects by influencing school achievement. There are two responses to this argument. First, the simple bivariate correlation between parental occupational status and early school leaving is low (at about -0.09) whereas the correlation between early school leaving and school achievement is twice as large (-0.20). Second, the correlation between achievement and parental occupational status is around 0.24 implying that the indirect effect of parental occupational status through achievement on early school leaving is very small.

Parents' Education

Table 1 showed that parental education has a similar relationship with early school leaving as parental occupational status. However, the multivariate analyses reveal that the effects of parents' education on early school leaving are stronger than the effects of parental occupational status (Figure 3). A one year increase in parents' average years of education is associated with a decrease of 0.9 in the odds of early school leaving, other things being equal. A five year difference (which is substantial for these data) translates to difference in odds of about 0.6 times. The effects of parents' education on early school leaving are significant and comparable for both boys and girls.

The effect of parents' education is not substantially altered by the addition of school level factors (Model 2, Table A1) and attitudes to school. However, the effect of parents' education among girls declines with the addition of aspirations. Therefore, the effect of parents' education on early school leaving for girls is substantially explained by higher aspirations. In other words part of the effect of parents' education on early school leaving can be attributed to higher educated parents encouraging higher aspirations among their daughters.

Ethnic Background

As shown in Table 1 students of non-English speaking backgrounds are less likely to leave school early. This finding was confirmed by the multivariate analyses in all four models. The effect of non-English speaking background on early school leaving is considerable (Figure 4). In Model 1, students from non-English-speaking backgrounds are about half as likely to leave school early net of differences in social background and school factors (Table A1). In Model 4, the effect is smaller (an odds ratio of about 0.6) mainly because students from non-English speaking backgrounds have more positive attitudes to school and higher aspirations for their education (Table A2).

A striking result of the influence of a non-English speaking background is the large gender difference. Girls from non-English speaking backgrounds are less likely to leave school early than boys. The difference in total effects is considerable. Girls from non-English speaking backgrounds are substantially less likely to leave school (an odds ratio of 0.35) than other girls whereas the effect of a non-English speaking background among boys is smaller with an odds ratio of about 0.6. The gender difference is also substantial in the other models with the effects of a non-English speaking background for boys explained almost entirely by attitudes to school (Model 3, Table A2). In contrast, the effect of a non-English speaking background for girls is strong in both Models 3 and 4 (Table A2).

Aboriginal and Torres Strait Islanders

Table 1 shows that Aboriginal and Torres Strait Islander students are substantially more likely to leave school early. In the multivariate analysis we control for social background, school achievement and other factors to investigate whether the increased likelihood of this group leaving school early is due to other factors. The results presented in Figure 4 show that Aboriginal or Torres Strait Islander students are more likely to leave school even when controlling for socioeconomic background and school achievement.

We found quite different results for boys and girls. For boys, the effect of being an Aboriginal or Torres Strait Islander was not statistically significant when controlling for other factors. This suggests that their increased propensity to leave school early can largely be attributed to their social backgrounds and school achievement. In contrast, girls in this group are substantially more likely to leave school early, net of the effects of other factors (Table A1 and Table A2). Therefore there are aspects about being a female Aboriginal or Torres Strait Islander student that contribute to early school leaving which are not related to the other factors in these models.

Region

Regional differences in early school leaving are apparent from Table 1. Overall, students living in non-metropolitan areas are more likely to leave school early than those in metropolitan areas, other things being equal (Figure 4). When controlling for school achievement and other factors in Model 1 the regional effects remain but only for boys. Boys living in regional areas (defined as centres with populations between 10,000 and 100,000 persons) in Year 9 are about 1.4 times as likely to leave school as boys living in metropolitan areas (Table A1). This effect is net of differences in social background, school and demographic factors. This difference declines with the addition of measures of attitudes to schools (Model 3, Table A2) suggesting that part of the total effect can be attributed to general satisfaction with school and attitudes to the students' own achievement. Differences in aspirations contribute little to the effects of living in a non-metropolitan area (Model 4, Table A2).

The effects of living in rural areas are even stronger. Again the effect was confined to boys. Male students living in remote rural centres (defined as having populations of less than 10,000) in Year 9 were about twice as likely to leave school early than not leave school compared to students living in metropolitan areas net of social background, school and other demographic factors (Model 1, Table A2). As for the case of living in a regional area, the effect of living in a rural/remote area on early school leaving is partially explained by attitudes to school (Model 3, Table A2).

School Achievement

Table 2 indicated that school achievement has a substantial effect on early school leaving. The multivariate analyses confirm its importance since its effects are strong in each of the four models analysed. Figure 3 shows how the odds of leaving school increase substantially with lower levels of school achievement. (Note that the scale range of odds ratios on the graph for school achievement is larger than the range for the other three graphs).

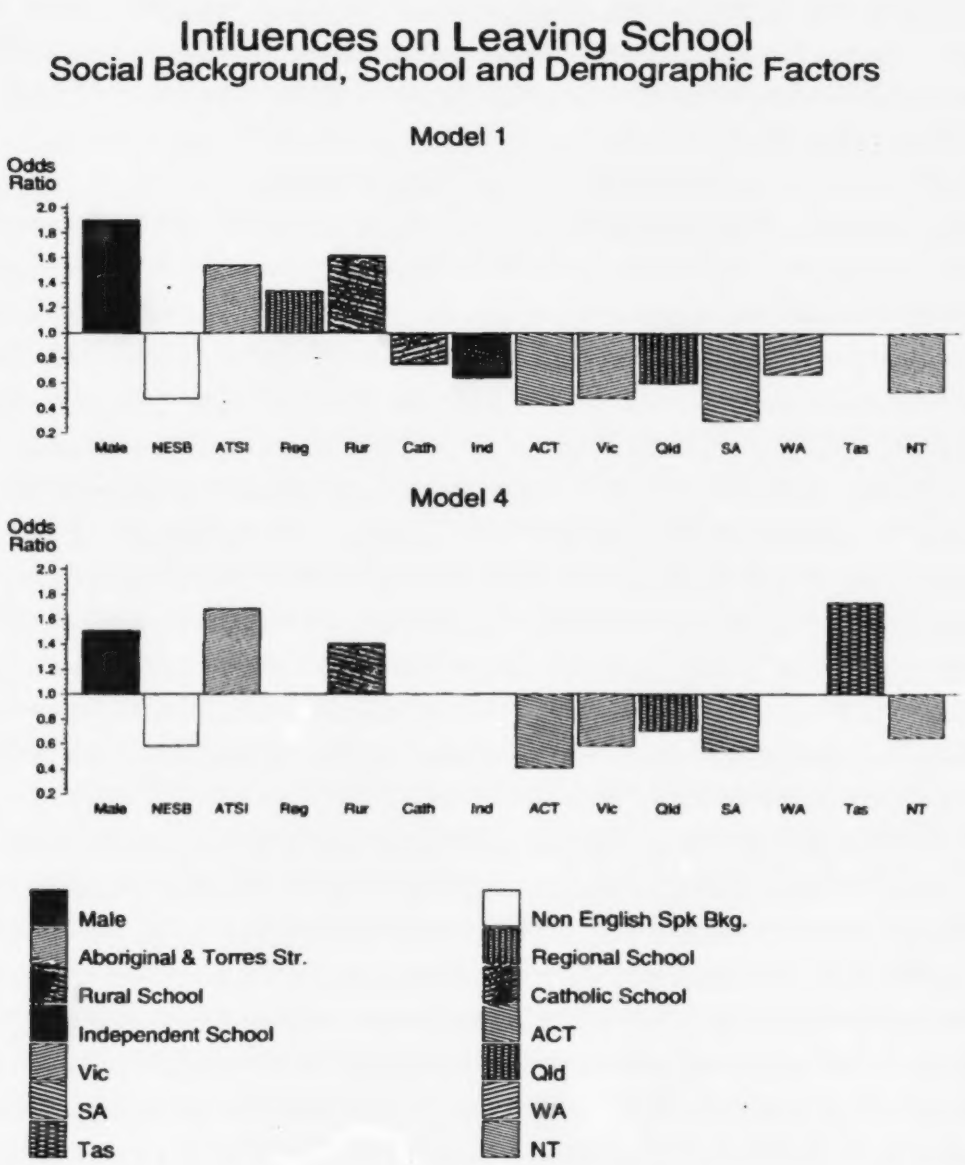

Figure 4 Net Effects of Background, School and Demographic Factors on Early School Leaving (Models 1 and 4).

Students who score more than one standard deviation below the mean for school achievement are nearly twice as likely to leave school than not leave school early compared to students with mean achievement scores; and nearly four times more likely to leave than students scoring one standard deviation above the mean (Table A1). Of the individual-level background and school factors, school achievement has the largest influence on early school leaving.

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The effect of achievement at school on early school leaving declines with the addition of other variables. Model 2 shows that the effect of schools' general level of achievement slightly reduces the effect of individual school achievement. The direct effect of achievement further declines with the addition of attitudes to school (Model 3). Therefore school achievement, as well as having a direct effect on early school leaving, also has an indirect effect via its influence on general satisfaction with school (especially among boys) and attitudes to achievement (especially among girls). With the addition of aspirations (in Model 4), the direct effect of achievement further declines because achievement also has an indirect effect on early school leaving via aspirations (Tables A1 and A2). In other words, aspirations partially explain the effect of achievement.

There is no difference in the total effects of achievement on early school leaving between boys and girls (Model 1). Only when attitudes to achievement are added to the model (Model 3) do gender differences in the effects of achievement emerge. Among girls, attitudes to achievement partially explain the effect of achievement on early school leaving.

State (and Territory) and School Sector

Figure 4 shows considerable State and sector differences in early school leaving. The large State and Territory differences identified in the bivariate analyses of Table 1 remain after controlling for the factors in Models 1 and 2. Students attending schools in States and Territories (other than Tasmania) are considerably less likely to leave school by the beginning of Year 11 than students in New South Wales. State and Territory effects in early school leaving (relative to students in New South Wales) tend to be as large or larger than the effects of other influences in these analyses.[11]

Students attending independent and Catholic schools in Year 9 are between 0.6 and 0.7 times as likely to leave school early than not leave school early compared to students attending government schools (Figure 4). The sector differences are substantially smaller in Model 1 than the differences shown in the bivariate analyses of Table 1.[12] There is no effect for attendance at a non-government school on early school leaving among girls after controlling for achievement and other factors in Model 1 (Table A1). This means that differences in early school leaving between girls attending schools in different school sectors (as shown in Table 1) can be attributed to student-level differences in social background and school achievement.

Focusing on sector differences among boys, the analyses of Model 2 and subsequent models found no significant effects of school sector on early school leaving. Therefore among boys, school-level factors (mean school socioeconomic status and mean school achievement) account for the sector differences in early school leaving that remain after controlling for differences in social background and school achievement.

School-Level Factors

Figure 1 indicates there are large between school differences in early school leaving. These differences may be attributed to differences in the schools' sociocultural environment. Here we discuss the effects on early school leaving of four measures of the schools' sociocultural environment: the schools' socioeconomic status; the schools'

academic climate; and school norms regarding school in general, and achievement. These four concepts were measured by calculating the (within school) mean levels of the students' socioeconomic status, achievement, general satisfaction with school, and attitudes to achievement.

Generally school-level measures have no effect on early school leaving. The mean socioeconomic status of the school has no effect on early school leaving with the exception of girls in Model 2. In this instance the effect of the individual level socioeconomic background had no effect. There were no effects for other measures of the sociocultural environment of the school. This finding confirms previous analyses of a smaller group of very early school leavers (Marks, 1998). Although these school-level factors were most often not statistically significant, their addition to the analyses reduced the effect of school sector to insignificance as discussed above.

Attitudes to School and Aspirations about Leaving School

Table 2 showed large effects of attitudes to school life on early school leaving. Some of the differences were similar in size to that of school achievement. The four dimensions of attitudes to school were added to the analysis in Model 3. In this model both general satisfaction with school and sense of achievement had significant effects on early school leaving. (Attitudes to teachers and the students' attitudes to the relevance of their school work had no significant effects). A 10 unit increase on these (100 point) measures decreased the odds of leaving school by about 0.9 times (Table A2). The effect of general satisfaction with school on early school leaving are considerably weaker than the effect of school achievement.[13] The effect of general satisfaction on early school leaving is higher among boys than girls whereas the effect of sense of achievement was stronger among girls than boys.

After controlling for aspirations, the effect of general satisfaction with school on early school leaving is considerably weaker than the effect of sense of achievement (Figure 3). In this model, general satisfaction with school had no effect on early school leaving among girls and a substantially smaller effect (than in previous models) among boys (Table A2).

The addition of aspirations to the analysis (in Model 4) made little difference to the effects of sense of achievement on early school leaving. This means that students' sense of achievement has an important effect on early school leaving, independent of the students' objective level of achievement and their aspirations.

In our discussion of Table 2, we noted that student aspirations have the largest effect on early school leaving. The multivariate analysis of Model 4 confirms its powerful effect (Table A2). Students who in Year 9 believed that they would not be at school in Year 11 were over 8 times more likely to have left school by the beginning of that year than remain at school compared to students with higher aspirations.[14] This effect is independent of social background, school achievement and other factors in Models 1 to 4. This result indicated that the decision to leave school was in many instances made long before the student actually left school. Furthermore it indicates that aspirations are not just a reflection of a student's social background or school achievement.

Effects of Individual Schools

The 1995 LSAY sample of Year 9 students was drawn from around 300 schools. Figure 1 shows that there are large differences between schools in the proportion of early school leavers. This section examines the extent to which the sampled schools differ in the propensity for students to leave school early. Subsequently we investigate if these differences can be explained by State and school sector differences or by the characteristics of the schools' student populations. The method is similar to that often used in school effectiveness research in which the between-school variation in achievement is analysed to identify which factors reduce (or are responsible for) the between-school variance. The detailed analyses are presented in Appendix 3.

Our analyses of the effects of individual schools suggest that approximately 5 per cent of sampled schools show significantly different rates of early school leaving that cannot be attributed to the State and sector of the schools, nor to their student composition. It is important to note that this estimate of 5 per cent is an approximation and a number of caveats apply.[15] Of these 14 schools, 13 showed significantly higher propensities for their students to leave school early and one showed a significantly lower likelihood of early school leaving. Students attending those schools with significant school effects were between 1.8 and 3.3 times more likely to leave school early than not leave school early compared to students at other schools, net of State, sector and individual student differences (ie. the factors in Model 1). These effects are substantial, but apply to only a very small proportion of Australian schools. Furthermore, our analyses suggest that within this group of schools our measures of the sociocultural environment of the school (in Model 2) can partially account for the remaining between-school differences in early school leaving.

POST-SCHOOL ACTIVITIES OF EARLY SCHOOL LEAVERS

Early school leaving is a concern because much research shows that early school leavers have relatively poorer labour market outcomes. As Table 3 indicated, most left school expecting to find employment. In this section we present findings from the 1997 survey in which early school leavers were asked a series of questions on their post-school activities.

Table 4 shows the main activity for all early school leavers and separately for males and females. The most surprising finding is the high percentage working in full-time jobs, and the lower than expected percentage looking for work. Over 70 per cent of early school leavers were employed full-time and a further 11 per cent were looking for work. These percentages are even more favourable for boys with 80 per cent in full-time work. This contrasts with the figure of around 38 per cent found by Holden (1992) for a much smaller sample of early school leavers.

Table 4 Main Activity of Early School Leavers during 1997 (Per cent)

Activity	All	Male	Female
Full-time job	72	80	58
Part-time job	8	7	10
Looking for work	11	10	13
Part-time study	5	3	9
Travel/Holiday	0	0	0
Other	4	2	9
	100	100	100

Note: *Figures are rounded and this may affect the total.*

Of those in full-time work approximately 70 per cent had found a full-time job within one month of leaving school. Approximately 95 per cent of those in full-time work had found a job within 6 months of leaving school. In addition, there was a high level of job stability, three-quarters of those in full time work at the time of the 1997 survey were still working in the same job they obtained after leaving school (which may have been up to 2 years earlier). When asked if they were happy that they left school early, nearly 90 per cent of all early school leavers indicated they were happy or very happy that they had left school.

Although the post-school activities of this sample of early school leavers is more positive than may have been expected, there are some worrying findings. Most noticeably, the proportion of female early school leavers working in full-time jobs is considerably lower than that for males. Furthermore, the proportion of females looking for work is considerably higher than that for males. The 42 per cent of female early school leavers without a full-time job are likely to find it difficult to obtain stable full-time employment. It is possible that greater propensity for males to leave school early may relate to their higher employment rate once they have left school. In other words males leave school early more often because they believe that they are likely to obtain employment.

Table 5 presents the occupational distributions for those early school leavers who were employed at the time of the 1997 interview. Two findings emerge from these data. The occupations of early school leavers are highly clustered in particular occupational groups and there is a large gender difference in this clustering. Males tend to work in the trade and unskilled manual occupations and females in sales and personal service work. However the extent to which gender segregates the jobs of early school leavers is a little surprising. It is not clear whether males or females will experience poorer labour market outcomes over the long run because of the different types of jobs they hold when they first gain employment. It is of some concern that substantial proportions of both sexes are in occupational groups (unskilled work for boys and sales and service work for girls) that typically have limited opportunities for advancement.

Table 5 Occupations of Early School Leavers, 1997 (Per cent)

Occupation type	All (N=767)	Male (N=419)	Female (N=268)
Managers and Administrators	2	2	1
Professionals	0	1	-
Para-professionals	1	1	1
Tradespersons	36	48	12
Clerks	5	1	13
Salespersons and Personal Service Workers	28	13	55
Plant and Machine Operators, and Drivers	2	3	1
Labourers and Related Workers	26	32	16
Unknown	1	0	1
	100	100	100

Note: *Figures are rounded and this may affect the total.*

The 1997 survey also collected data on work satisfaction for all respondents who were working either full-time or part-time. This includes full-time students with part-time jobs, as well as those who have left school already. Table 6 shows that generally work satisfaction is high among both groups. However, there are important differences between early school leavers and students who were also working. Early school leavers are substantially more satisfied concerning the kind of work they do, the immediate boss or supervisor, and the opportunity for promotion. Only on the issue of pay were early school leavers marginally less satisfied than students with part-time jobs. Early school leavers in paid employment appear to be generally satisfied with most aspects of their work.

Table 6 Work Satisfaction among Students Working Part-time and Employed Early School Leavers, 1997 (Per cent)

Satisfaction with...	*Very* or *Fairly Satisfied*	
	School Students in Part-time Work	Employed Early School Leavers
The kind of work you do	79	96
The people at work	96	97
The immediate boss or supervisor	78	94
The amount of pay	87	84
The opportunity for training	84	85
The tasks assigned	91	95
The recognition given to tasks well-done	81	88
The opportunity for promotion	55	72

CONCLUSION

Around 9 per cent of the students in Year 9 in 1995 had left school by 1997, that is, before Year 11. One of the most important findings from this report is the dominant effect of school achievement on early school leaving. Students who perform well at school are far less likely to leave school early. In contrast, students who have low levels of achievement are much more likely to leave school early. It would be of great concern for school system administrators if school achievement had only weak effects on early school leaving.

Although the effects of school achievement on early school leaving are very strong, it is by no means the only influence on early school leaving. Even after statistical controls for a wide range of other factors, we find evidence for systematic social disadvantage for a number of social groups.

There is a strong tendency for boys compared to girls to leave school early. This effect is stronger than many of the other factors influencing early school leaving. Furthermore, other research suggests that the gender differences in early school leaving appear to be increasing over time. It may be argued that boys are more likely to leave school early because there are greater job opportunities for boys in the teenage labour market. The results reported here support this argument to some extent. However, because of the likely long-term labour market outcomes for early school leavers, the greater likelihood for boys to leave school early requires some careful consideration.

Although the effects of occupational and educational background on early school leaving tend to be weak, it is important to note that these effects are net of school achievement. The effect of educational background is stronger than the effects of parental occupational status. Of students who have the same level of achievement, students from less educated backgrounds are significantly more likely to leave school early. However, these effects are substantial only when comparisons are made between students from very highly educated and very poorly educated households.

As Table 1 indicated, over 20 per cent of Aboriginal and Torres Strait Islander students had left school by the beginning of Year 11, almost 2.5 times higher than for other students. After controlling for school achievement, economic and social background, the odds ratio declined, but remained at about 1.5. So the higher rate of early school leaving among Aboriginal and Torres Strait Islander students is only partially explained by their lower levels of achievement and lower socioeconomic backgrounds. A substantial component is due to other factors associated with being an Aboriginal and Torres Strait Islander. These other factors may include social or cultural norms regarding early school leaving, pessimism about their ability to remain at school, a lack of encouragement to do so, or a feeling that remaining at school would not "pay off" either in terms of further education or better jobs. This result suggests further efforts need to be made to increase the school retention rate of Aboriginal and Torres Strait Islander students.

Students living in regional and rural areas are more likely to leave school early than students living in major metropolitan areas. The effect of regional background is confined to male students and is stronger for those in rural and remote areas. The multivariate analyses show that these differences cannot be fully explained by differences in school

achievement, school sector, individual schools in these areas, or to social background. Furthermore, students living in rural and regional areas are unlikely to leave school early because of the opportunities for full-time work in these areas. It is unclear why students living in these areas tend to leave school early at a higher rate, but again it may be due to social norms about early school leaving.

There are State and school sector differences in early school leaving. The sector differences were minimal when controlling for student differences in school achievement and social background, and disappeared altogether, when controlling for the schools' sociocultural environment. In contrast, State and Territory differences were large in each of the four models analysed. They cannot be attributed just to individual or school-level differences of the students in the different States and Territories.

Most students who leave school early do so mainly because they seek employment. Only small proportions suggested that school factors were the main reason for leaving school and few indicated that remaining at school was a financial problem. These results correspond to 1982 ABS findings which showed that only small percentages of early school leavers give 'being fed up with school' or 'the subjects are too hard' as the main reason for leaving school. The greater proportion said they left school to obtain either an apprenticeship or a full-time job (ABS, 1982).

Only a small proportion of schools (about 5 per cent) appear to have significant effects on early school leaving net of other factors. For the overwhelming majority of schools there are no school effects. Measures of State, sector and achievement account for most of the statistically significant school differences in early school leaving. Further detailed study of the small number of schools where school leaving is more common than would be expected (given the academic and social mix of their students), may uncover some common characteristics of those schools.

Finally, the results show that a high proportion of early school leavers are employed. Over 70 per cent are working full-time with a further 8 per cent working part-time. Only about 10 per cent are looking for work. Female school leavers are faring less well in the labour market with only 58 per cent in full-time work and a higher proportion of females looking for work. Although early school leavers are more likely to be male than female, the lower proportion of girls employed full-time and the high proportion in 'other' (usually domestic) activities is cause for concern.

The higher proportion of early school leavers in this data working full-time may be due to the better economic conditions of 1996-1997 compared to the early 1990s, or the possibility that the younger age group of early school leavers examined here experience less competition in the labour market than 19 year olds. The labour market situation of early school leavers will continue to be monitored through the LSAY project to investigate whether this apparently reasonable start in the labour market is maintained as they grow older.

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APPENDIX 1: DATA AND METHODS

Data

The data for this study come from the *Longitudinal Surveys of Australian Youth* (LSAY) project, which studies the experiences of young people as they move from school into post-secondary education and training and work. This is a research project, conducted by the Australian Council for Educational Research, which investigates the changing educational and labour force participation of different age groups of young people. The project is funded by the Department of Education, Training and Youth Affairs.

This study focuses on the 1995 Year 9 cohort, who were in year 9 in 1995. The initial sample included 13,613 students from all States and school sectors, with approximately equal numbers of males and females. The students were surveyed in their schools, where they completed a questionnaire about themselves and their families, and undertook reading comprehension and numeracy tests. In 1996 a second survey gathered information about their experiences in 1996 including whether or not they had left school (N=9837). A third survey was conducted by telephone between September and December 1997. The number of useable cases from this wave was 10,307. The 1997 survey included a separate section on school leavers asking them their reasons for leaving school and their post-school activities. It also included measures of work satisfaction.

Measures

Early school leavers were identified by questions in the 1996 and 1997 survey instruments on whether they were at school and if they were not, what year and month had they left school. To be categorised as an early school leaver they had to have left school before the beginning of Year 11 (1997) and not returned to school. The surveys clearly distinguished between students who changed schools between Years 10 and 11 (for example, as in college systems of Tasmania and the ACT) and those students who had permanently left school.

The 1995 LSAY data includes scores on two ACER administered tests of literacy and numeracy. The highest possible score for each test range is 20. An overall measure of early school achievement was derived from the scores to both tests. The tests include many items used in previous national studies of literacy and numeracy (the 1975 and 1980 ASSP studies) and in longitudinal studies of Australian young people (the 1989 *Youth in Transition* study and the *Australian Youth Survey*). For these analyses these measures were centred about their means.

The individual-level social background and demographic factors comprise gender, parents' occupational status, parents' education, ethnic background, region and the State or Territory of the students' place of residence. The school factors comprise school sector and school achievement.

Occupational status was measured with the ANU3 occupational status score calculated from the ASCO codes for parents' occupations. Parents' education was measured by

years of education. Region was measured by three categories, metropolitan, regional and rural based on the number of persons in the locality. Ethnicity was measured by the language spoken at home, contrasting households where the language spoken mainly at home was not English compared to households where English was mainly spoken. Aboriginal and Torres Strait Islander students were contrasted with other students. Achievement was measured by the combined score (standardised) on the literacy and numeracy tests the students' took when in Year 9.

Regional areas were defined as centres with populations between 10,000 and 100,000 persons and rural and remote areas were centres with less than 10,000 persons or farms.

The 1995 questionnaire contained a section about students' attitudes to school. Students were asked about a range of items – school in general, how they got on with their teachers, and how they felt about school work and their achievements at school. The items were prefaced by the words '*My school is a place where...*', and students were asked to indicate whether they strongly agreed, agreed, disagreed or strongly disagreed with each one. Four scales were created from these 29 items on students' attitudes to school. They are general satisfaction scale (*General Satisfaction*), a measure comprising items on relationships with teachers (*Teachers*), a scale comprising items that focus on the relevance of school work to future life (*Opportunity*) and a scale of items about the students' achievement at school (*Sense of Achievement*). The Attitudes to school life were the focus of LSAY Research Report No 5.

The school-level factors added in Model 2, are the average socioeconomic status, achievement scores, general level of satisfaction with the school, and attitudes to achievement. Measures of the sociocultural environment of the school were constructed by calculating the mean score for students in each school for parental occupation, achievement, general satisfaction and attitude to achievement. Each student was then assigned the mean score of their school for each of these four measures.

'Aspirations' were measured by the students' responses to a question in the 1995 questionnaire asking, 'When do you plan to leave school'. Students who indicated they planned to leave school by the end of Year 10 were distinguished from students who indicated they planned to leave school at a later point in time.

Analysis

All Tables and Figures present the results from weighted analyses. The weights correct for differences between the sample and the population of Year 9 students in 1995 and sample attrition between 1995 and 1997.

A multilevel statistical procedure was used to obtain estimates of the effects of the influences on early school leaving, the between school variation and the effects for individual schools. The statistical procedure was PROC MIXED in the SAS statistical program. Multilevel analyses are appropriate in this instance for several reasons. First the sample is a two stage cluster sample (see LSAY Technical Paper No. 3 available from ACER) and multilevel modelling is appropriate since students are not statistically independent units. Second, multilevel procedures are able to provide estimates of the

contribution of between school differences in the variation of early school leaving. Finally, multilevel analysis provides more accurate estimates of the effects of aggregate measures such as State or Territory, school sector and the school level measures. A logistic regression macro within the multilevel procedure was used to obtain the parameter estimates for the influences on early school leaving. These multilevel analyses were also weighted.

APPENDIX 2: RESULTS OF LOGISTIC REGRESSIONS ON EARLY SCHOOL LEAVING

Table A1 Influences on Early School Leaving (Models 1 and 2)

	Model 1			Model 2		
	All	Male	Female	All	Male	Female
Intercept	-2.69***	-2.08***	-2.68***	-2.81***	-2.17***	-2.81***
Social Background, Demographic and School Factors						
Gender (Male)	0.64***			0.63***		
Occupational Status (ANU3 x 10)	-0.05**	-0.07**	0.04	0.04*	-0.06*	0.03
Parents' Education	-0.11***	-0.10***	-0.13***	-0.11***	-0.10***	-0.12***
Non-English Speaking Background	-0.75***	-0.49**	-1.05***	-0.77***	-0.51**	-1.06***
Aboriginal and Torres Strait	0.43**	0.28	0.57**	0.43**	0.28	0.57**
Regional	0.29**	0.43**	0.14	0.26*	0.42**	0.09
Rural	0.48***	0.73***	0.21	0.43***	0.70***	0.16
Achievement (ACER tests)	-0.68***	-0.69***	-0.67***	-0.65***	-0.66***	-0.65***
State/Territory (Relative to NSW)						
Australian Capital Territory	-0.85**	-0.86*	-0.97*	-0.85**	-0.86*	-0.93*
Northern Territory	-0.64*	-0.69†	-0.64	-0.64*	-0.68†	-0.65
Queensland	-0.52***	-0.54**	-0.58**	-0.55***	-0.56**	-0.63**
South Australia	-1.20***	-1.42***	-1.02***	-1.06***	-1.27***	-0.87***
Tasmania	0.26	-0.11	0.48†	0.32	-0.04	0.53†
Victoria	-0.74***	-0.68***	-0.86***	-0.69***	-0.62***	-0.83***
Western Australia	-0.40*	-0.59**	-0.24	-0.37*	-0.54**	-0.22
School Sector (Ref: Gov)						
Catholic School	-0.29*	-0.28	-0.24	-0.11	-0.16	-0.04
Independent School	-0.45**	-0.54*	-0.07	-0.11	-0.34	0.39
School-Level Factors						
Mean School SES (x10)				-0.15	0.08	-0.27*
Mean School Achievement				-0.16	-0.28	-0.04
Mean School General Satisfaction				-0.02	-0.01	-0.03†
Mean School Attitude to Achievement				-0.02	-0.03	-0.01

Note: † 0.10>P>0.05 * 0.05<P<0.01; ** 0.01>P>0.001; *** P<0.001

Table A2 Influences on Early School Leaving (Models 3 and 4)

	Model 3			Model 4		
	All	Male	Female	All	Male	Female
Intercept	-2.83***	-2.29***	-2.83***	-3.13***	-2.72***	-3.19***
Social Background, Demographic and School Factors						
Gender (Male)	0.58***			0.41***		
Occupational Status (ANU3 x 10)	-0.06**	-0.07*	-0.06†	-0.06*	-0.06*	-0.07*
Parents' Education	-0.12***	-0.12***	-0.12**	-0.09***	-0.11***	-0.07†
Non-English Speaking Background	-0.60***	-0.31	-0.94***	-0.54**	-0.22	-0.93***
Aboriginal Torres Strait	0.36*	0.23	0.43†	0.52**	0.38	0.56*
Regional	0.14	0.32*	-0.10	0.06	0.22	-0.16
Rural	0.36**	0.58***	0.11	0.34**	0.55***	0.08
Achievement (ACER tests)	-0.58***	-0.63***	-0.52***	-0.44***	-0.48***	-0.38***
State/Territory (Relative to NSW)						
Australian Capital Territory	-1.16**	-1.22**	-1.22*	-0.89*	-0.95*	-1.01†
Northern Territory	-0.39	-0.26	-0.49	-0.12	0.03	-0.18
Queensland	-0.49**	-0.47*	-0.54*	-0.35*	-0.32	-0.40
South Australia	-0.93***	-1.00***	-0.88**	-0.61**	-0.66*	-0.56†
Tasmania	0.60*	0.25	0.88**	0.55*	0.06	0.97**
Victoria	-0.77***	-0.61**	-1.04***	-0.54**	-0.35	-0.89**
Western Australia	-0.33†	-0.41†	-0.28	-0.19	-0.32	-0.09
School Sector (Ref: Gov)						
Catholic School	-0.18	-0.22	-0.10	-0.08	-0.14	0.00
Independent School	-0.07	-0.31	0.49	-0.08	-0.37	0.55
School-Level Factors						
Mean School SES (x10)	-0.16	0.01	-0.27†	-0.13	0.01	-0.18
Mean School Achievement	-0.18	-0.33	-0.07	-0.30	-0.42†	-0.28
Mean School General Satisfaction	-0.01	0.01	-0.03	-0.01	0.02	-0.04†
Mean School Attitude to Achievement	-0.02	-0.04	0.00	-0.01	-0.03	0.02
Aspirations and Attitudes to School						
General Satisfaction (x 10)	-0.14***	-0.16***	-0.11*	-0.08*	-0.12**	0.02
Attitude to Teachers (x 10)	-0.02	0.02	0.01	0.04	0.03	-0.07
Opportunity (x 10)	-0.03	0.02	0.04	0.00	0.01	-0.01
Achievement (x 10)	-0.13***	-0.08*	-0.23***	-0.13***	-0.09*	-0.21***
Aspirations				2.12***	2.01***	2.43***

Note: † 0.10>P>0.05 * 0.05<P<0.01; ** 0.01>P>0.001; *** P<0.001

APPENDIX 3: ANALYSIS OF THE EFFECTS OF INDIVIDUAL SCHOOLS

In this Appendix we detail the analysis of the effects of individual schools on early school leaving.

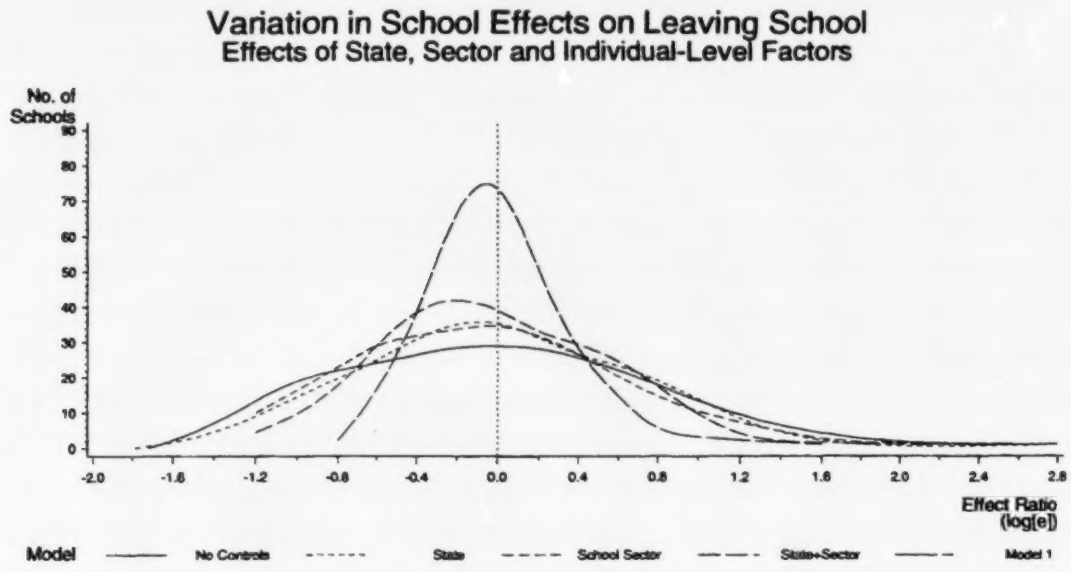
Figure A1 shows the variation in early school leaving for the individual schools in the 1995 Year 9 LSAY sample with different models of early school leaving. The effect ratios are the logistic effects for early school leaving centred around the average incidence of early school leaving.

Focusing on the unbroken line (—) in the top panel of Figure A1 which is for the null-model, that is with no explanatory variables (Model I), about 25 schools have no effect on early school leaving compared to the mean incidence of early school leaving. About 20 schools have an effect of around –0.8, meaning that students who attend these schools are about 0.45 times as likely to leave school early rather than not leave school compared to students in those schools with average levels of early school leaving.[16] Similarly, a further 20 schools have an effect of 0.8 meaning that students who attend these schools are 2.2 times more likely to leave school early than not leave school early compared to students in those schools with average levels of early school leaving.

The next step is to examine the variance of these school differences after the addition of State, school sector, (Models II to IV) and the factors in Models 1 to 4 (the same models discussed throughout this report) to identify the factors responsible for the between school variation in early school leaving. The sizeable differences between States and sectors in early school leaving suggest they contribute. Alternatively each group of factors in Models 1 to 4 may explain the between-school variation in early school leaving. The between-school variation may simply reflect individual student differences in social background and achievement, the schools' sociocultural environments, the attitudes of students to school or the students' aspirations.

The top panel in Figure A1 shows the variation in school effects with initially no controls (Model I - discussed above), controls for State and sector, first separately (Models II and III) and subsequently together (Model IV), and finally for the factors in Model 1. The bottom panel shows this variation for Models 1 to 4. The variation in school effects (on early school leaving) is substantially reduced when controlling for State and school sector together and are further reduced with the addition of the other factors in Model 1 (Top Panel, Figure A1). The between-school variation in early school leaving is only marginally reduced with the addition of the factors in Models 2, 3 and 4. Therefore we conclude that the between-school variation in early school leaving is substantially reduced by the factors in Model 1, that is State, school sector, social background and achievement. The schools' sociocultural environment and the students' attitudes to school and their aspirations do not further contribute to between-school differences in early school leaving.

Figure A1 suggests that the variation in school effects on early school leaving is reasonably large. However, many of the effects close to zero are not statistically significant suggesting that in these schools there are no individual school effects. Therefore the next step in the analysis of school effects is to focus on those schools in which there are statistically significant school effects.



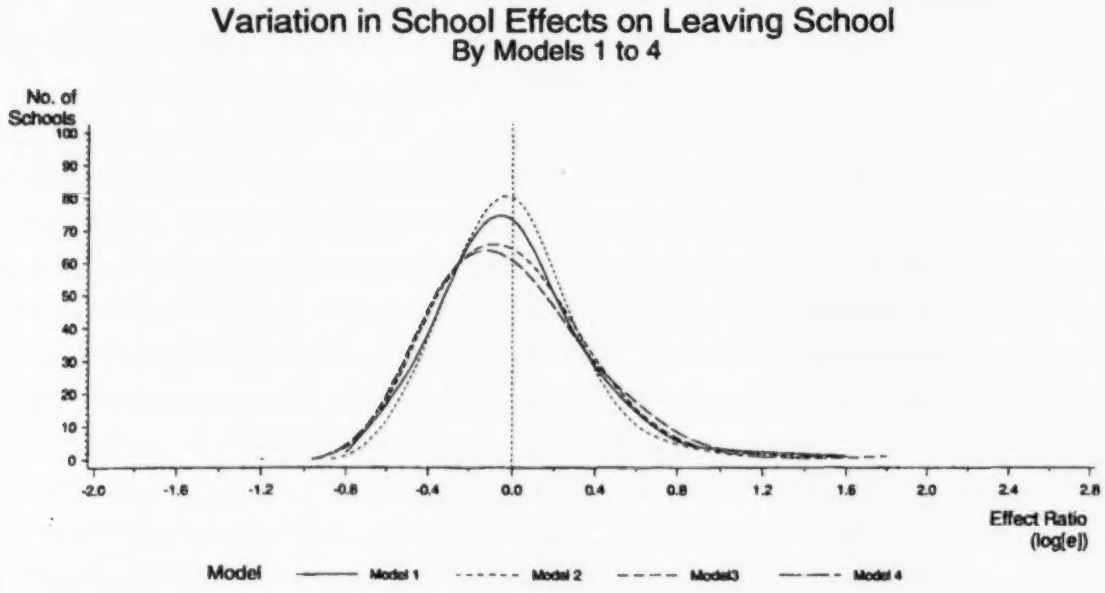


Figure A1 Between-School Variation in Early School Leaving

Table A3 shows the proportion of schools in which the likelihood of early school leaving is significantly different from the bulk of schools. On analysing early school leaving by individual schools, we find that in approximately 18 per cent of schools the likelihood of early school leaving is statistically significant. This percentage is reduced to 11 per cent after adjusting for the overall State and school sector differences in early school leaving (Model IV). Model V, which comprises State, school sector and achievement reduces the percentage of schools with significant school effects to 6 per cent. Therefore State, school sector and achievement account for two-thirds of schools with significant school effects.

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Further analyses suggest that differences in the characteristics of the students only marginally reduce the percentage of schools with significant school effects on early school leaving. After controlling for the factors in Model 1 this percentage declines 1 per cent to 5 per cent (bold in Table A3). Therefore most of the difference between Model IV and Model 1 in the percentage of schools with significant school effects is due to school achievement. We emphasise this model since it includes individual level factors but not measures of the schools sociocultural environment. Addition of the school environment measures (Model 2) further reduces the number of schools with significant effects on early school leaving to 3 per cent. The addition of students' attitudes to school (Model 3) and aspirations (Model 4) do not further reduce the number of schools with significant school effects (Table A3).

Table A3 Number and Per Cent of Schools with Non-Significant and Significant Net Effects on Early School Leaving

No.	Model	Non-Significant		Significant	
		Number	Per Cent	Number	Per Cent
I	Schools Only (Null)	246	82	53	18
II	I + State	253	84	46	16
III	I + Sector	255	85	44	15
IV	I + State+Sector	265	89	34	11
V	IV+Achievement	282	94	18	6
1	**Model 1**	**285**	**95**	**14**	**5**
2	Model 2	290	97	9	3
3	Model 3	290	97	9	3
4	Model 4	290	97	9	3

NOTES

1 This difference was not significant. However the lack of a statistically significant difference in the LSAY sample is most likely to be due to the small numbers of very early school leavers rather than to no gender differences in the population of very early school leavers.

2 If a continuous variable is normally distributed; 16 per cent of students are more than one standard deviation below the mean, 34 per cent are between the mean and one standard deviation below the mean, 34 per cent are between the mean and one standard deviation above the mean and 16 per cent are more than one standard deviation above the mean. In skewed variables the distribution will vary from these percentages.

3 The correlations between early school leaving for the four dimensions of attitudes to school were –0.15 for General Satisfaction, -0.12 for Teachers and Opportunity, and –0.19 for Attitudes to Achievement. Therefore general satisfaction and achievement are stronger correlates and this is reflected in the multivariate analyses.

4 The correlation between early school leaving and aspirations is 0.38. This compares with -0.20 for achievement, -0.09 for parents' education and -0.08 for parental occupational status.

5 A higher proportion of boys (9 per cent) than girls (5 per cent) intended to leave school by the beginning of Year 11.

6 Note that leaving school to attend another school is not counted as leaving school.

7 It should be noted that only a sample of students were selected from each school so the incidences of early school leaving are subject to sampling error. The sampling error is higher in schools with only a small number of sampled students or in schools where a high proportion of students have not continued to participate in the LSAY surveys.

8 Odds ratios are not simply the quotient of the percentage of early school leavers in one group compared to another group. For example if 20 per cent of students in one group left school early and 10 per cent of students in the comparison group left school early then the odds ratio is the quotient of the group specific odds of leaving school compared to not leaving school, ie.

odds ratio =(20/80)/(10/90) = 2.25

Odds ratios have the important property of being independent of the marginal distributions. The odds ratios remain unaffected if group 1 is larger or smaller than group 2, or if the proportion of early school leavers is large or small.

9 This is the odds ratio unadjusted for the effects of other factors. This is calculated by the following formula:

(Per cent of Boys Leaving School Early/Per cent of Boys not leaving school early)
(Per cent of Girls Leaving School Early/Per cent of Girls not leaving school early)

= (10/90)/(7/93)
= 1.48

10 The effects of Non-English speaking background, being an Aboriginal or Torres Strait Islander and living in a rural locality are also large but unlike gender these effects apply to only small groups of students.

11 These adjusted State and Territory differences would be smaller if Victoria, Queensland, South Australia or Western Australia were used as the reference category.

12 The comparable odds ratios for the bivariate results are 0.6 for Catholic schools and 0.3 for Independent schools.

13 It is not readily apparent from Table 2 that achievement has a stronger effect since achievement and attitudes to school are measured on different metrics. One comparison is to compare the odds ratios for students at the extremes of the distribution. For a four standard deviation difference in achievement (98 per cent of students) the relative odds of early school leaving is 10. For general satisfaction with school the largest difference is between a score of 0 and 100. In this instance the odds ratio is about 4. An alternative comparison is to focus on the standard deviations. The standard deviations for general satisfaction and sense of achievement are 17 and 16 units respectively. From the results in Table 2 this converts to effects on early school leaving of 0.24 and 0.21 for one standard deviation difference in general satisfaction and sense of achievement. This compares with an effect of 0.58 for school achievement.

14 This compares with an odds ratio of 14.8 for the unadjusted effect (or a logistic effect of 2.7) calculated from the percentages presented in Table A2.

15 It should be noted that multilevel modelling of dichotomous outcomes is in its infancy. There are debates concerning statistical tests for school effects. The SAS procedure used here (PROC MIXED) may be more or less generous than other software for multilevel modelling. An additional caveat is that the LSAY sample of schools is not entirely selected at random but randomly selected according to school size. Furthermore, if a greater number of students were selected within each school then the school effects would be reliable although PROC MIXED makes adjustments for school size. Despite these caveats, the figure of 5 per cent is the best approximation given the LSAY sample and the current state of multilevel modelling of dichotomous outcomes.

16 Odds ratios are the exponents of the log odds or logistic effects; 0.45 and 2.2 are the exponents of –0.8 and 0.8 respectively.

LONGITUDINAL SURVEYS OF AUSTRALIAN YOUTH (LSAY)

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